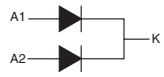
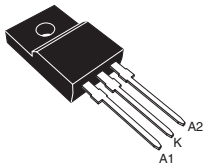
STPS10150C

High voltage power Schottky rectifier

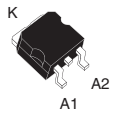
Main product characteristics

$I_{F(AV)}$	2 x 5 A
V_{RRM}	150 V
T_j	175° C
V_F(max)	0.75 V

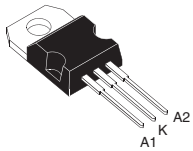




TO-220FPAB
STPS10150CFP



D²PAK
STPS10150CG



TO-220AB
STPS10150CT

Features and benefits

- HIgh junction temperature capability
- Good trade off between leakage current and forward voltage drop
- Low leakage current
- Avalanche capability specified
- Insulated package
  - TO-220FPAB
    Insulating voltage = 2000 V
    Typical package capacitance 12 pF

Description

Dual center tap schottky rectifier designed for high frequency Switched Mode Power Supplies.

Order Codes

Part Number	Marking
STPS10150CT	STPS10150CT
STPS10150CG	STPS10150CG
STPS10150CG-TR	STPS10150CG
STPS10150CFP	STPS10150CFP

Table 1. Absolute ratings (limiting values)

Symbol	Parameter				Value	Unit
V_{RRM}	Repetitive peak reverse voltage				150	V
$I_{F(RMS)}$	RMS forward voltage				10	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB D^2PAK	T_C = 155° C	Per diode	5	A
		TO-220FPAB	T_C = 145° C	Per device	10	
I_{FSM}	Surge non repetitive forward current		t_p = 10 ms sinusoidal		120	A
P_{ARM}	Repetitive peak avalanche power		t_p = 1 µs T_j = 25° C		3100	W
T_{stg}	Storage temperature range				-65 to + 175	° C
T_j	Maximum operating junction temperature(1)				175	° C
dV/dt	Critical rate of rise of reverse voltage				10000	V/µs

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

1 Characteristics

Table 2. Thermal resistance

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB, D^2PAK	Per diode	4	° C/W
		TO-220FPAB		7	
		TO-220AB, D^2PAK	Total	2.4	
		TO-220FPAB		5.3	
$R_{th(c)}$	Coupling	TO-220AB, D^2PAK		0.7	
		TO-220FPAB		3.7	

When the diodes 1 and 2 are used simultaneously:
ΔT_j(diode 1) = P(diode 1) x $R_{th(j-l)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 3. Static electrical characteristics (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25° C	$V_R = V_{RRM}$			2.0	µA
		T_j = 125° C			0.40	2.0	mA
V_F (2)	Forward voltage drop	T_j = 25° C	I_F = 5 A			0.92	V
		T_j = 125° C			0.69	0.75	
		T_j = 25° C	I_F = 10 A			1	
		T_j = 125° C			0.79	0.85	

1. t_p = 5 ms, δ < 2%
2. t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:
$P = 0.65 \times I_{F(AV)} + 0.02\ I_F^2{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current (per diode)

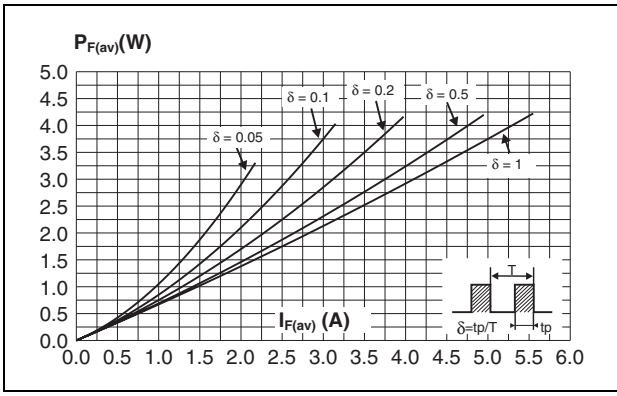
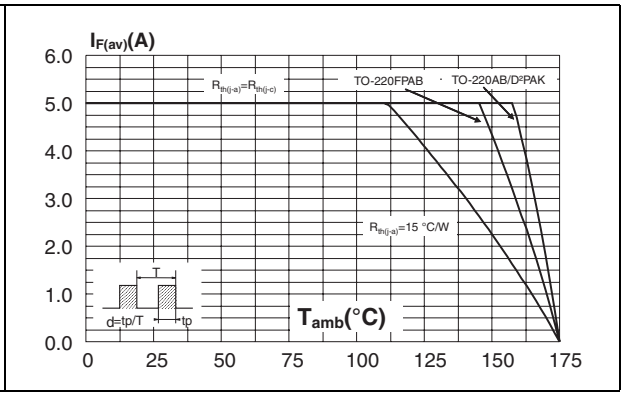


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode)



3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10150CT	STPS10150CT	TO-220AB	2.20 g	50	Tube
STPS10150CG	STPS10150CG	D^2PAK	1.48 g	50	Tube
STPS10150CG-TR	STPS10150CG	D^2PAK	1.48 g	1000	Tape and reel
STPS10150CFP	STPS10150CFP	TO-220FPAB	2.0 g	50	Tube